REMARKS

Claims 1-36 have been examined. New claims 37-51 have been added to further describe

the patentable features of the present invention.

Summary Of The Office Action

Claims 1-36 are pending in the application. The Examiner indicates that the arguments

accompanying the Amendment filed on March 18, 2008 have been considered but are not

persuasive. Therefore, the Examiner maintains that claims 1-36 are rejected.

Rejections of the Claims under 35 U.S.C. § 103

Hartung in view of Holmes

Claims 1, 3-5, 7-12, 14, 16-22, 24, 26-28, 30, 31, and 33-36 stand rejected under 35

U.S.C. 103(a) as being unpatentable over Hartung et al. (US 5,309,232) in view of Holmes et al.

(Speech Synthesis and Recognition).

Claim 1, as amended, recites:

A digital audio signal encoding method comprising:
(a) performing a time-frequency transformation on an input audio signal
and generating a time-frequency band table by dividing the transformed input
audio signal into a plurality of frequency blocks in each frame and a time-
frequency index combination;
(b) based on the generated time-frequency band table, searching for a
nearest neighbor block of a current block being currently encoded, and generating
information on the nearest neighbor block; and
(c) generating a bitstream containing the generated information on the
nearest neighbor block,

wherein time-frequency band table includes a plurality of time frames,
which have a time correlation, arranged to intersect with a plurality of frequency
bands, which range from a lowest frequency band to a highest frequency band, to
form the plurality of frequency blocks such that each frequency block corresponds
to one of the plurality of time frames and one of the plurality of frequency bands,
and

each frequency block is assigned index information including a time frame index and a frequency band index, the index information of a corresponding frequency block being dependent upon a location of the corresponding frequency block within the time-frequency table relative to a location and the index information of the current block.

The Examiner correctly concedes that Hartung fails to perform step (a), "performing a time-frequency transformation on an input audio signal and generating a time-frequency band table by dividing the transformed input audio signal into a plurality of frequency blocks in each frame and a time-frequency index combination," but contends that Holmes teaches these features. In particular, the Examiner appears to assert that the spectrogram of Holmes inherently contains time-frequency information, and thus, when the encoding technique of Hartung is applied to the spectrogram of Holmes, the combination results in the Applicant's claimed invention. The Examiner also asserts that each pixel of the spectrogram is a frequency block (i.e., energy at a frequency and time).

Although the spectrogram of Holmes appears to have frequency and time components, the spectrogram is not equivalent to the time-frequency band table as claimed in claim 1. For example, the spectrogram merely illustrates a plot or graph of a Fourier Transform, and shows a magnitude thereof at a particular frequency and time. The pixels are randomly displayed according to the magnitude of the Fourier Transform. Thus, the alleged frequency blocks (i.e., the pixels) are not **formed by** a plurality of time frames, which have a time correlation, arranged to intersect with a plurality of frequency bands, which range from a lowest frequency band to a highest frequency band. That is, although a pixel may correspond to a particular frequency and time, they are not formed by the arrangement of time frames intersecting with frequency bands. Instead, they are formed by a plotting a waveform (i.e., the transformed audio signal) in the form of a spectrogram, which do not have the claimed index information assigned thereto.

Furthermore, the spectrogram does not include frequency blocks with index information as claimed in claim 1. That is, the pixels of the spectrogram are not formed by the arrangement of time frames intersecting with frequency bands such that the pixel is assigned index information, and more particularly, index information which is dependent upon a location of the corresponding frequency block within the time-frequency table relative to a location and the index information of the current block. Holmes fails to teach or suggest that each pixel within the spectrogram is assigned index information dependent upon the location of the pixel in relation to the location of another pixel.

As also noted in the Amendment filed on March 18, 2008, the time-frequency table in the present invention is for searching for the nearest neighbor block, while the spectrogram in Holmes is for displaying a spectrogram to interpret a Fourier Transform easily. In other words, the time-frequency table in the present invention includes data of "scalar type," the data being obtained through a time-frequency transformation (for example, an MDCT transformation), while the spectrogram in Holmes includes data in a graph form that is easily for interpreting the characteristics of a signal. Thus, the spectrogram in Holmes is not appropriate for searching for the nearest neighbor block, because, although the data type is advantageous to interpret the characteristic of a signal, it is disadvantageous to compare signals for searching for the nearest neighbor block. In making the rejection, the Examiner must consider all teachings, including any disclosure in the cited art that teach away from the claimed invention. Accordingly, the spectrogram in Holmes does not correspond to the time-frequency table in the present invention (e.g., claim 1). Furthermore, applying Hartung's encoding technique to the spectrogram does not result in the time-frequency table of claim 1. There is no teaching or suggestion in the cited art that the time-frequency band table or the claimed invention as a whole would necessarily result,

as asserted by the Examiner. Also, neither Hartung or Holmes teaches "performing a time-frequency transformation on an input audio signal and generating a time-frequency band table by dividing the transformed input audio signal into a plurality of frequency blocks in each frame and a time-frequency index combination."

Applicants submit that Hartung also fails to teach or suggest these features of claim 1. Therefore, Hartung, alone or in combination with Holmes, fails to teach or suggest each and every feature of claim 1. Thus, claim 1 should be patentable for at least the above reasons. It is noted that claims 7, 14, 17, 21, 26, 30 and 34 contain features analogous to that described in claim 1 and should be patentable for similar reasons.

Applicants submit that the remaining dependent claims are patentable at least by virtue of their dependencies.

<u>Hartung in view of Holmes in further view of Nakamura</u>

The Examiner rejects claims 2, 15, 23 and 32 under 35 U.S.C. 103(a) as being unpatentable over Hartung in view of Holmes and in further view of Nakamura (US 6,226,325). However, Nakamura fails to correct the deficiencies of Hartung and Holmes presented above. Therefore, claims 2, 15, 23 and 32 are patentable at least by virtue of their dependencies.

<u>Hartung in view of Holmes in further view of Zibman</u>

The Examiner rejects claims 6, 13, 25, and 29 under 35 U.S.C. 103(a) as being unpatentable over Hartung in view of Holmes and in further view of Zibman et al. (US 4,748,579 "Zibman"). However, Zibman fails to correct the deficiencies of Hartung and Holmes presented above. Therefore, claims 6, 13, 25, and 29 are patentable at least by virtue of their dependencies.

New claims and Claim Amendments

By this Amendment, Applicants have added new claims 37-51 to further define the claimed invention. Applicants respectfully submit claims 37-51 recite additional features which are not taught or suggested by the prior art of record.

In addition, Applicants amend "a block being currently encoded" recited in the claims to "a current block currently encoded" to be consistent throughout the claims.

Furthermore, claims 2 and 15 are amended merely to improve the clarity of the claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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23373

CUSTOMER NUMBER

Date: August 27, 2008

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